

What is Claimed is:

1. A lock assembly, comprising:

a lock cylinder for actuating a latch assembly wherein said lock cylinder comprises:

a lock sleeve having an axial rotor hole and a plurality of first and second tumbler
5 sockets radially distributed on an inner surface of said lock sleeve;

a plurality of tumblers being coaxially placed in said first and second tumbler
sockets respectively;

a lock rotor assembly, comprising:

a first lock rotor, having a tubular shaped, being rotatably and coaxially fitted in
10 said axial rotor hole of said lock sleeve to define a first keyway therethrough, said first lock
rotor having a plurality of first locking holes radially distributed on an outer circumferential
surface of said first lock rotor, wherein each of said first locking holes is capable of coaxially
aligning with said first tumbler sockets respectively;

a second lock rotor, having a tubular shaped, being rotatably and coaxially fitted in
15 said axial rotor hole of the lock sleeve to define a second keyway therethrough wherein said
second keyway is normally misaligned with said first keyway so as to block up an
arrangement of said tumblers within said first locking holes, said second lock rotor having a
plurality of second locking holes radially distributed on an outer circumferential surface of
said second lock rotor, wherein each of said first locking holes is capable of coaxially
20 aligning with said second tumbler sockets respectively;

a plurality of lock pins being disposed in said first and second locking holes
respectively;

a lock cover coaxially mounted on said lock sleeve at an entrance of said axial
rotor hole, wherein said lock cover has a key access slot, having a predetermined length,
25 coaxially formed thereon, said key access slot being normally aligned with said first keyway
of said first lock rotor in such a manner that said key head of said key is adapted to insert
into said first keyway through said key access slot;

a key aligning arrangement for aligning said first lock rotor in an initial position normally and enabling said first lock to be rotated to align said first keyway with said second keyway; and

a plurality of resilient elements being coaxially disposed in said first and second
5 tumbler sockets respectively and applying urging pressures on said tumblers to move inwardly towards said first and second locking holes until an inner portion of each of said tumblers is disposed in said respective first and second locking hole and an outer portion of said tumbler is disposed in said respective first and second tumbler socket so as to lock up rotational movements of said first and second lock rotors within said lock sleeve; and

10 a key comprising a key head and an elongated key body, wherein said key head comprises at least a radial protrusion radially extended from said key head at a predetermined radial direction, wherein said radial protrusion has a plurality of locking serrations arranged in such a manner that when said key head is inserted into said first keyway, wherein said key body is rearwardly extended from said key head, wherein when
15 said key head is inserted into said second keyway, said key body is positioned within said first keyway in such a manner that when said second lock rotor is driven to rotate by said key head, said first lock rotor is remained in position, wherein said locking serrations of said key head are adapted to drive said respective lock pins to pull said respective tumblers moving outwardly into said first tumbler sockets correspondingly to unlock said first lock
20 rotor and enable said first lock rotor freely rotating until said first keyway is aligned with said second keyway, simultaneously, said key head being adapted to insert into said second keyway such that said locking serrations of said key head are adapted to drive said respective lock pins to pull said respective tumblers moving outwardly into said second tumbler sockets correspondingly so as to unlock said second lock rotor to enable said
25 second lock rotor to freely rotate to control said locking and unlocking of said latch assembly.

2. The lock assembly, as recited in claim 1, wherein said key aligning arrangement, which has an axial receiving groove provided on an outer side of said first lock rotor and two alignment indentions provided on an inner side of said lock cover, comprises
30 an aligning member having a round head, slidably received in said axial receiving groove and a compression spring received in said axial receiving groove applying an urging

pressure against said alignment member to push said round head of said aligning member to bias against said inner side of said lock cover at one of said alignment indentions, wherein said alignment indentions being formed on said lock cover at positions that when said first lock rotor is in said initial position and when said first lock rotor is rotated to align
5 said first keyway with said second keyway respectively.

3. The lock assembly, as recited in claim 1, wherein said key aligning arrangement comprises a protrusion outwardly extended from said key and first and second indicators provided on an outer side of said lock cover, wherein when said key head is inserted into said first keyway, said protrusion on said key is pointed to said first indicator,
10 and when said first lock rotor is rotated by said key head until said protrusion is pointed to said second indicator, said first keyway is aligned with said second keyway so that said key head is allowed to insert into said second keyway.

4. The lock assembly, as recited in claim 2, wherein said key aligning arrangement further comprises a protrusion outwardly extended from said key and first and
15 second indicators provided on an outer side of said lock cover, wherein when said key head is inserted into said first keyway, said protrusion on said key is pointed to said first indicator, and when said first lock rotor is rotated by said key head until said protrusion is pointed to said second indicator, said first keyway is aligned with said second keyway so that said key head is allowed to insert into said second keyway.

20 5. The lock assembly, as recited in claim 1, wherein each of said first and second lock rotors further has a pin seat provided in each of said first and second locking holes such that said pins are allowed to sit on said pin seats within said first and second locking holes respectively so as to prevent said pins sliding into said first and second keyways respectively.

25 6. The lock assembly, as recited in claim 2, wherein each of said first and second lock rotors further has a pin seat provided in each of said first and second locking holes such that said pins are allowed to sit on said pin seats within said first and second locking holes respectively so as to prevent said pins sliding into said first and second keyways respectively.

7. The lock assembly, as recited in claim 3, wherein each of said first and second lock rotors further has a pin seat provided in each of said first and second locking holes such that said pins are allowed to sit on said pin seats within said first and second locking holes respectively so as to prevent said pins sliding into said first and second
5 keyways respectively.

8. The lock assembly, as recited in claim 4, wherein each of said first and second lock rotors further has a pin seat provided in each of said first and second locking holes such that said pins are allowed to sit on said pin seats within said first and second locking holes respectively so as to prevent said pins sliding into said first and second
10 keyways respectively.

9. The lock assembly, as recited in claim 1, wherein said key further has at least one or more additional radial protrusions radially extended from said key head at predetermined radial directions respectively, wherein said serrations are formed on each of said radial protrusions, wherein each of said first and second keyways has a corresponding
15 cross section that said key head is adapted to fittedly insert therethrough, wherein said first and second locking holes are selectively aligned on each of said radial protrusions of said key head in such an axial and radial positions so that said serrations of said key head are adapted to engage with said tumblers in said lock cylinder in said radial directions.

10. The lock assembly, as recited in claim 2, wherein said key further has at
20 least one or more additional radial protrusions radially extended from said key head at predetermined radial directions respectively, wherein said serrations are formed on each of said radial protrusions, wherein each of said first and second keyways has a corresponding cross section that said key head is adapted to fittedly insert therethrough, wherein said first and second locking holes are selectively aligned on each of said radial protrusions of said
25 key head in such an axial and radial positions so that said serrations of said key head are adapted to engage with said tumblers in said lock cylinder in said radial directions.

11. The lock assembly, as recited in claim 3, wherein said key further has at least one or more additional radial protrusions radially extended from said key head at predetermined radial directions respectively, wherein said serrations are formed on each of
30 said radial protrusions, wherein each of said first and second keyways has a corresponding cross section that said key head is adapted to fittedly insert therethrough, wherein said first

and second locking holes are selectively aligned on each of said radial protrusions of said key head in such an axial and radial positions so that said serrations of said key head are adapted to engage with said tumblers in said lock cylinder in said radial directions.

12. The lock assembly, as recited in claim 4, wherein said key further has at least one or more additional radial protrusions radially extended from said key head at predetermined radial directions respectively, wherein said serrations are formed on each of said radial protrusions, wherein each of said first and second keyways has a corresponding cross section that said key head is adapted to fittedly insert therethrough, wherein said first and second locking holes are selectively aligned on each of said radial protrusions of said key head in such an axial and radial positions so that said serrations of said key head are adapted to engage with said tumblers in said lock cylinder in said radial directions.

13. The lock assembly, as recited in claim 5, wherein said key further has at least one or more additional radial protrusions radially extended from said key head at predetermined radial directions respectively, wherein said serrations are formed on each of said radial protrusions, wherein each of said first and second keyways has a corresponding cross section that said key head is adapted to fittedly insert therethrough, wherein said first and second locking holes are selectively aligned on each of said radial protrusions of said key head in such an axial and radial positions so that said serrations of said key head are adapted to engage with said tumblers in said lock cylinder in said radial directions.

14. The lock assembly, as recited in claim 1, wherein said locking serrations of said key head has a longitudinal head serrate section and a longitudinal tail serrate section integrally extended therefrom, wherein said locking serrations within said head serrate section of said key head are arranged to engage with said respective tumblers within said first locking holes respectively to unlock a rotational movement of said first lock rotor and said locking serrations within said head and tail serrate sections of said key head are arranged to engage with said respective tumblers within said second locking holes respectively to unlock a rotational movement of said second lock rotor.

15. The lock assembly, as recited in claim 1, wherein a length of said head serrate section is longer than that of said tail serrate section, wherein a pattern of said

locking serrations within said tail serrate section of said key head is repeated within a portion of said head serrate section of said key head.

16. The lock assembly, as recited in claim 2, wherein said locking serrations of said key head has a longitudinal head serrate section and a longitudinal tail serrate section
5 integrally extended therefrom, wherein said locking serrations within said head serrate section of said key head are arranged to engage with said respective tumblers within said first locking holes respectively to unlock a rotational movement of said first lock rotor and said locking serrations within said head and tail serrate sections of said key head are arranged to engage with said respective tumblers within said second locking holes
10 respectively to unlock a rotational movement of said second lock rotor.

17. The lock assembly, as recited in claim 2, wherein a length of said head serrate section is longer than that of said tail serrate section, wherein a pattern of said locking serrations within said tail serrate section of said key head is repeated within a portion of said head serrate section of said key head.

15 18. The lock assembly, as recited in claim 9, wherein said locking serrations of said key head has a longitudinal head serrate section and a longitudinal tail serrate section integrally extended therefrom, wherein said locking serrations within said head serrate section of said key head are arranged to engage with said respective tumblers within said first locking holes respectively to unlock a rotational movement of said first lock rotor and
20 said locking serrations within said head and tail serrate sections of said key head are arranged to engage with said respective tumblers within said second locking holes respectively to unlock a rotational movement of said second lock rotor.

19. The lock assembly, as recited in claim 9, wherein a length of said head serrate section is longer than that of said tail serrate section, wherein a pattern of said
25 locking serrations within said tail serrate section of said key head is repeated within a portion of said head serrate section of said key head.